

WHAT IS CLAIMED IS:

1. A channel coding and multiplexing apparatus in a CDMA communication system, in which data frames that may have different transmission time intervals (TTIs) are received in parallel via a plurality of transport channels and multiplexed to form a serial data frame, the apparatus comprising:

a number of radio frame matchers, the number of radio frame matchers being at least equal to the number of transport channels, each radio frame matcher having a radio frame segmenter for receiving a data frame, to segment the data frames into radio frames; and

a multiplexer for multiplexing the radio frames to form the serial data frame.

2. The channel coding and multiplexing apparatus of claim 1, wherein each radio frame segmenter determines the bit number of a radio frame according to the size of an input transport channel frame and the TTI of a radio frame and divides the data frame by the bit number of the radio frame.

3. The channel coding and multiplexing apparatus of claim 2, wherein each radio frame matcher further includes an interleaver for interleaving an input transport channel frame and applying the interleaved frame to a corresponding radio frame segmenter.

4. The channel coding and multiplexing apparatus of claim 2, wherein each radio frame matcher further includes a rate matcher for adjusting the data rate of a radio frame received from a radio frame segmenter by puncturing and repeating the radio frame to match the data rate of the radio frame to that of a physical channel frame.

5. The channel coding and multiplexing apparatus of claim 1, wherein the radio frame matchers are connected between channel coders and the multiplexer in an uplink channel transmitting device, and each of the radio frame matchers of the uplink channel transmitting device comprises:

an interleaver for interleaving an input transport channel frame;

a radio frame segmenter for determining the bit number of a radio frame according to the size of the input transport channel frame and a radio frame TTI and dividing the data frame by a variable, said variable being a function of the radio frame TTI; and

a rate matcher for adjusting the data rate of a radio frame received from the radio frame segmenter by puncturing and repeating parts of the radio frame to match the data rate of the radio frame to that of a physical channel frame.

6. The channel coding and multiplexing apparatus of claim 1, wherein the radio frame matchers are connected between channel coders and a multiplexer in a downlink channel transmitting device, and each of the radio frame matchers of the downlink channel transmitting device comprises:

an interleaver for interleaving an input transport channel frame;

a radio frame segmenter for determining the bit number of a radio frame according to the size of the input transport channel frame and a radio frame TTI and dividing the data frame by a variable, said variable being a function of the radio frame TTI.

7. A channel coding and multiplexing apparatus in a CDMA communication system, in which data frames that have one or more transmission time intervals (TTIs) are received in parallel via a plurality of transport channels and converted to data frames of multi-code physical channels, the apparatus comprising:

a number of radio frame matchers, the number of radio frame matchers being at least equal to the number of transport channels, each radio frame matcher having a radio frame segmenter for receiving a data frame, to segment the data frames into radio frames;

5 a multiplexer for multiplexing the radio frames to form the serial data frame; and
a physical channel segmenter for segmenting the serial data frame by the number of the physical channels and outputting the segmented physical channel frames to corresponding physical channels.

10 8. A channel coding and multiplexing apparatus in a CDMA communication system, in which data frames that have one or more transmission time intervals (TTIs) are received in parallel via a plurality of transport channels and multiplexed to a serial data frame, the apparatus comprising:

15 a number of radio frame matchers, each of the radio frame matchers determining the number of filler bits and inserting one of the filler bits into one of the data frames and each of the radio frame matchers having a radio frame segmenter for receiving a data frame and for segmenting the data frame having the filler bit into radio frames; and

a multiplexer for multiplexing the radio frames to form the serial data frame.

20 9. The channel coding and multiplexing apparatus of claim 8, wherein each radio frame segmenter determines the bit number of the radio frames according to the size of the corresponding data frame, a radio frame TTI, and the number of filler bits, and divides the corresponding data frame by the bit number of the radio frames.

25 10. The channel coding and multiplexing apparatus of claim 9, wherein each radio frame matcher further includes an interleaver for interleaving one of the data frames and applying the interleaved frame to a corresponding radio frame segmenter.

11. The channel coding and multiplexing apparatus of claim 9, wherein each radio frame matcher further includes a rate matcher for adjusting the data rate of a radio frame received from a radio frame segmenter by puncturing and repeating parts of the radio frame to match the data rate of the radio frame to that of a physical channel frame.

12. A channel coding and multiplexing apparatus in a CDMA communication system, in which data frames that have one or more transmission time intervals (TTIs) are received in parallel via a plurality of transport channels and converted to data frames of multi-code physical channels, the apparatus comprising:

a number of radio frame matchers, each of the radio frame matchers determining the number of filler bits and inserting one of the filler bits into one of the data frames and each of the radio frame matchers having a radio frame segmenter for receiving a data frame and for segmenting the data frame having the filler bit into radio frames;

a multiplexer for multiplexing the radio frames to form a serial data frame; and

a physical channel segmenter for segmenting the multiplexed serial data frame by the number of the physical channels and assigning the segmented physical channel frames to corresponding physical channels.

13. A channel coding and multiplexing method in a CDMA communication system in which data frames that have one or more transmission time intervals (TTIs) are received in parallel via a plurality of transport channels and multiplexed to form a serial data frame, the method comprising the steps of:

receiving data frames and segmenting the data frames into radio frames in a number of radio frame matchers, the number of radio frame matchers being at least equal to the number of the transport channels; and

multiplexing the radio frames to form the serial data frame.

14. A channel coding and multiplexing method in a CDMA communication system, in which data frames that have one or more transmission time intervals (TTIs) are received in parallel via a plurality of transport channels and converted to data frames of multi-code physical channels, the method comprising the steps of:

receiving data frames and segmenting the data frames into radio frames in a number of radio frame matchers, the number of radio frame matchers being at least equal to the number of the transport channels;

multiplexing the radio frames to form a serial data frame;

segmenting the serial data frame by the number of the physical channels; and

outputting the segmented physical channel frames to corresponding physical channels.

15. A channel coding and multiplexing method in a CDMA communication system in which data frames that have one or more transmission time intervals (TTIs) are received in parallel via a plurality of transport channels and multiplexed to form a serial data frame, the method comprising the steps of:

receiving data frames;

determining a number of filler bits;

inserting the filler bits into the data frames;

segmenting the data frames including the filler bits into radio frames in a number of radio frame matchers, the number of radio frame matchers being at least equal to the number of transport channels; and

multiplexing the radio frames to form the serial data frame.

16. A channel coding and multiplexing method in a CDMA communication system, in which data frames that have one or more transmission time intervals (TTIs)

are received in parallel via a plurality of transport channels and converted to data frames of multi-code physical channels, the method comprising the steps of:

receiving data frames;

determining a number of filler bits;

5 inserting the filler bits into the data frames;

segmenting the data frames including the filler bits into radio frames in a number of radio frame matchers, the number of radio frame matchers being at least equal to the number of transport channels;

multiplexing the radio frames to form a serial data frame;

segmenting the serial data frame by the number of the physical channels; and

assigning the segmented physical channel frames to the corresponding physical channels.

17. A channel receiving device for desegmenting a received serial data frame to a plurality of transport channel frames in a CDMA communication system, comprising:

a demultiplexer for demultiplexing the serial data frame to radio frames of a plurality of transport channels; and

a plurality of radio frame dematchers, the number of radio frame dematchers being at least equal to the number of transport channels, each radio frame dematcher having a radio frame desegmenter for receiving corresponding radio frames and for desegmenting the radio frames to transport channel frames.

18. A channel receiving device for desegmenting a received serial data frame to a plurality of transport channel frames in a CDMA communication system, comprising:

a physical channel desegmenter for desegmenting data frames received via

multi-code physical channels to a serial data frame;

a demultiplexer for demultiplexing the serial data frame to radio frames of a plurality of transport channels; and

- 5 a plurality of radio frame dematchers, the number of radio frame dematchers being at least equal to the number of transport channels, each radio frame dematcher having a radio frame desegmenter for receiving the corresponding radio frames and for desegmenting the radio frames to data frames of the transport.

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